TRIODE PENTODE

UCL83

Combined triode and output pentode with separate cathodes and 100mA heater intended for use in audio frequency applications.

HEATER

Suitable for series operation a.c. or d.c.

I_h	100	mA
V_h	38	V ←

MOUNTING POSITION

Any

CAPACITANCES (measured without an external shield)

c_{at-gp}	<0.1	pF
c_{at-ap}	<1.6	pF
c_{gt-gp}	<0.03	pF
c_{gt-ap}	<0.05	pF

Pentode section

c_{a-g1}	<0.2	pF
c_{in}	5.7	pF
c_{out}	4.7	pF
c_{g1-h}	0.4	pF

Triode section

c_{a-g}	1.6	pF
c_{in}	2.3	pF
c_{out}	0.32	pF

CHARACTERISTICS

Pentode section

V_a	170	V
V_{g2}	170	V
I_a	30	mA
I_{g2}	5.0	mA
V_{g1}	−9.5	V
g_m	5.5	mA/V
r_a	53	kΩ
μ_{g1-g2}	10	

Triode section

V_a	170	200	V
I_a	1.6	2.4	mA
V_g	−1.5	−1.5	V
g_m	2.1	2.5	mA/V
r_a	40	34	kΩ
μ	82	85	



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PENTODE SECTION AS AUDIO OUTPUT VALVE

Single valve class 'A'

V_a	170	200	V
V_{g2}	170	200	V
V_{g1}	−9.5	−13	V
$I_{a(o)}$	30	27	mA
$I_{g2(o)}$	5.0	4.4	mA
R_a	5.5	7.5	kΩ
$V_{in(r.m.s.)}$	5.0	5.2	V
P_{out}	2.2	2.5	W
D_{tot}	10	10.5	%

Two valves in class 'AB' push-pull

V_a	170	200	V
V_{g2}	170	200	V
R_k	180	220	Ω
$I_{a(o)}$	2×24	2×25	mA
I_a (max. sig.)	2×27.5	2×29	mA
$I_{g2(o)}$	2×3.8	2×3.9	mA
I_{g2} (max. sig.)	2×6.25	2×8.5	mA
R_{a-a}	6.5	7.5	kΩ
$V_{in(g1-g1)r.m.s.}$	17	23.5	V
P_{out}	5.0	7.2	W
D_{tot}	3.6	4.2	%

TRIODE SECTION AS A.F. VOLTAGE AMPLIFIER

V_b (V)	R_a (kΩ)	I_a (μA)	R_k (kΩ)	$\frac{V_{out}}{V_{in}}$	V_{out} ($V_{r.m.s.}$)	R_{g1}* (kΩ)
170	100	650	1.8	49	15.3	330
200	100	720	2.2	47	17.7	330

$\frac{V_{out}}{V_{in}}$ measured with an input of 100mV

V_{out} measured for a total harmonic distortion of 5%

*Grid resistor of following valve.

LIMITING VALUES

Pentode section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	5.4	W
$V_{g2(b)}$ max.	550	V
V_{g2} max.	250	V
p_{g2} max.	1.2	W
p_{g2} max. (speech and music)	2.4	W
I_k max.	45	mA
R_{g1-k} max. (self-bias)	500	kΩ
R_{g1-k} max. (fixed bias)	250	kΩ
V_{h-k} max. (r.m.s. or d.c. cathode positive)	250	V
V_{h-k} max. (d.c. cathode negative)	100	V

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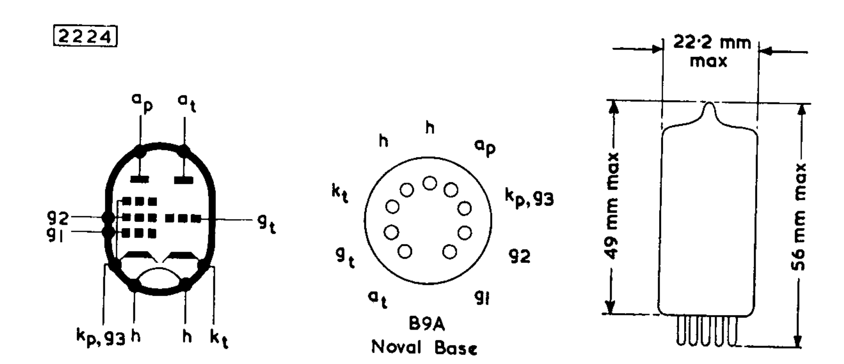
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LIMITING VALUES

Triode Section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	3.5	W
I_k max.	15	mA
R_{g1-k} max. (fixed bias)	1.0	MΩ
R_{g1-k}max (grid current biasing)	22	MΩ
V_{h-k} max. (d.c. cathode positive or a.c.$_{r.m.s.}$)	250	V
V_{h-k} max. (d.c. cathode negative)	100	V



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ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. V_{g2}=170V

